primary—have been invited, and also well-known leaders in industry and commerce. The chair will be taken by Sir Henry Miers, and the draft prepared to be submitted to the conference for approval suggests the following subjects to be dealt with by committees of experts:—(*a*) Reforms in administration, including co-ordination of various grades of education; (*b*) the relation of technical colleges, university courses, and research scholarships to manufactures; (*c*) training of women for professional, technical, and commercial occupations, and for domestic life; (*d*) improvements in the curricula of schools and in instructional materials and methods, so as to make them more purposeful and adaptable to after life; (*e*) extension of educational facilities to all juveniles after fourteen; (*f*) training and status of teachers, and research in education; (*g*) medical service and physical education; (*h*) character training and training for leisure; (*i*) reform of examinations, also of methods of selecting candidates for public appointments, and for promotion within educational institutions.

ARRANGEMENTS have been made for the usual short summer course at the Oxford School of Geography for teachers and others interested in geography; but the meeting will not take place this year unless a prescribed minimum number of applications is received by the middle of April. If this number is reached an introductory lecture will be given on the afternoon of August 3. There will be two lectures and at least one period of practical work or an excursion each day. There will be short courses on selected topics of physical, historical, and political geography (especially geographical problems affecting the war and the British Empire), on transport and trade routes, on the teaching of geography, and on the Oxford district. The fee will be 3*l*. for the whole course; a number of students will be accepted for lectures only at a fee of 2*l*. for the course, or of 2*s*. for single lectures. Further particulars will be issued as early as possible in May. Names cannot be sent in too soon, addressed to the Vacation Course Secretary, School of Geography, 40 Broad Street, Oxford, to whom, also, all requests for further information should be sent.

THE paper on "Part-time Education for Boys and Girls," which Mr. J. H. Reynolds read at the Conference of Educational Associations last January, has been circulated in pamphlet form. The paper is rich in impressive facts, which demand the earnest consideration of British statesmen. Mr. Reynolds points out there are 71,000 half-time children, chiefly in the textile districts of the north, to-day. There are some 193,000 children who have entirely left school on reaching the age of thirteen. The number of young people in England and Wales between the ages of fourteen and seventeen was, according to the last census, 2,030,195, to which must be added nearly 200,000 who had left school and entered into employment at thirteen, giving a total of at least 2¼ millions. About 436,000 of these were receiving some sort of education, leaving a net total of upwards of 1,800,000 young people who had ceased to continue their education at day or evening schools. There are in England and Wales 236,000 children below fourteen working half-time or full-time, and 200,000 more working for wages while attending school for full-time. As Mr. Reynolds urges, there is an imperative necessity for a compulsory system of continued education for all children leaving the elementary school at fourteen, who enter into employment, and it might extend from six to eight hours per week throughout the greater part of the year, meaning annually some 270 hours of systematic instruction extending over at least three years.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, March 23.—Sir J. J. Thomson, president, in the chair.—G. **Green**: The main crests of ship waves, and on waves in deep water due to the motion of submerged bodies. The fundamental problem of ship waves is to determine the wave disturbance produced by an arbitrary pressure system advancing over the free surface. The present paper gives a general method of obtaining the solution of the moving pressure problem in the form of an integral, and proceeds to the evaluation of the integral in some particular cases of ship waves.—E. H. **Nichols**: Investigation of atmospheric electrical variations at sunrise and sunset. Observations were made for a period of fifteen minutes before and fifteen minutes after both sunrise and sunset, using the Wilson compensating gold-leaf electroscope for conductivity and earth-air current, and two Ebert electrometers for measuring the positive and negative electric charges. The results show a decided uniform decrease in the value of electrical quantities throughout the sunset period, but the solar effect at sunrise is not at all pronounced. The potential curves for Kew Observatory were analysed for the years 1912 and 1914 for the 30-minute period at sunrise and sunset, and monthly means obtained for 5-minute intervals, these being corrected for diurnal variation. There is a general increase in the potential at both sunrise and sunset, being more noticeable in the winter months, but there is no evidence of any sudden change. It is possible that the electrical variations observed may be of assistance in elucidating the problems of wireless transmission.

PARIS.

Academy of Sciences, March 13.—M. Camille Jordan in the chair.—H. **Douvillé**: A family of Ammonites, the Desmoceratideæ: an attempt at a rational classification. The value and subordination of characters.—M. de la Vallée-Poussin was elected a correspondant for the section of geometry in the place of Félix Klein.—J. **Guillaume**: Observations of the sun made at the Observatory of Lyons during the third quarter of 1915. Observations were possible on eighty-five days, of which fifty-one were consecutive, from July 24 to September 12.—Arnaud **Denjoy**: Differentiation and its inverse.—Grace Chisholm **Young**: Derived numbers of a function.—Maurice **Le Pen** and Jean **Villey**: The measurement of the power of motors.—C. **Dauzère**: The crystallisation of phenyl ether.—E. **Briner**: The mechanism of reactions in *aqua regia*. A study of the reaction $HNO_3+3HCl=NOCl+Cl_2+2H_2O$, which is shown to be reversible. The system was proved to be monovariant, three phases and two independent components.—Carl **Störmer**: The altitude of the aurora borealis observed from Bossekop (Norway) during the spring of the year 1913. A large number of simultaneous photographs of the aurora were taken from the extremities of a base line 27·5 kilometres long, leading to 2500 determinations of the height. The results are given, both in graphical and tabular form. The heights vary from 86 to 180 kilometres, with a maximum frequency at 105 to 106 kilometres.—Ph. **Flajolet**: Perturbations of the magnetic declination at Lyons (Saint Genis Laval) during the third quarter of 1915.—F. **Jadin** and A. **Astruc**: The manganese in some springs of the Pyrenees range. There is a certain relation between the amounts of manganese and total mineral matter in a water. Ferruginous waters usually contain a high proportion of manganese. It was noted that although sodium sulphide waters contain extremely minute proportions of manganese, yet the algæ growing round these springs contain this element in relatively high pro-

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portions.—H. **Bouygues**: The tissues at the summit of the Phanerogam stem.—Lucien **Daniel**: The specific variations in the chemistry and structure provoked by grafting the tomato and the cabbage.—O. **Laurent**: The metallic suture in complicated fractures of the femur and humerus. Of the various methods used, wiring with one or two thick silver wires has proved the most satisfactory, details being given of the application of this treatment to several cases of fracture.—Jules **Amar**: Apparatus for prothesis of the upper limbs. Detailed description of two forms of mechanical arms.—R. **Ledoux-Lebard** and A. **Dauvillier**: Theoretical and experimental researches on the bases of the quantitave determination of the X-rays in radiotherapy.

BOOKS RECEIVED.

Rambles in the Vaudese Alps. By F. S. Salisbury. Pp. x+154. (London: J. M. Dent and Sons, Ltd.) 2*s*. 6*d*. net.

Department of the Interior. Weather Bureau. Annual Report of the Weather Bureau for the Year 1913. Part iii. Pp. 331. (Manila: Bureau of Printing.)

With Scott: the Silver Lining. By Dr. G. Taylor. Pp. xvi+464. (London: Smith, Elder and Co.) 18*s*. net.

Mathematical Papers for Admission to the Royal Military Academy and the Royal Military College for the Years 1906–15. (London: Macmillan and Co., Ltd.) 6*s*.

Macmillan's Geographical Exercise Books. Key to II., Europe, with questions by B. C. Wallis. Pp. 48. (London: Macmillan and Co., Ltd.) 2*s*. 6*d*. net.

Factories and Great Industries. By F. A. Farrar. Pp. 90. (Cambridge: At the University Press.) 1*s*. 6*d*.

Trade and Commerce. By A. J. Dicks. Pp. 94. (Cambridge: At the University Press.) 1*s*. 6*d*.

Ships, Shipping, and Fishing. By G. F. Bosworth. Pp. 86. (Cambridge: At the University Press.) 1*s*. 6*d*.

Icones Plantarum Formosanarum. By B. Hayata. Vol. v. Pp. vi+358+xvii plates. (Taihoku: Government of Formosa.)

Colour: a Handbook of the Theory of Colour. By G. H. Hurst. Second edition, revised by H. B. Stocks. Pp. vii+160. (London: Scott, Greenwood and Son.) 7*s*. 6*d*. net.

Stanford's War Maps, Nos. 16 and 17. (London: E. Stanford, Ltd.) 5*s*. and 3*s*.

DIARY OF SOCIETIES.

THURSDAY, March 30.

Royal Society, at 4.30.—Skull of Ichthyosauras, Studied in Serial Sections: Prof. W. J. Sollas.—The Relation of Excised Muscle to Acids, Salts and Bases: Dorothy J. Lloyd.—The Endemic Flora of Ceylon, with Reference to Geographical Distribution and Evolution in General. A Correction: J. C. Willis.

Child Study Society, at 6.—The Child Delinquent: C. M. Chapman.

FRIDAY, March 31.

Royal Institution, at 5.30.—The Spectra of Hydrogen and Helium: Prof. A. Fowler.

SATURDAY, April 1.

Royal Institution, at 3.—Radiations from Atoms and Electrons: Sir J. J. Thomson.

MONDAY, April 3.

Society of Chemical Industry, at 8.

Royal Geographical Society at 8.30.—A Year's Travel in New Caledonia: C. H. Compton.

Royal Society of Arts, at 4.30.—Surveying: Past and Present: E. A. Reeves.

Society of Engineers, at 5.30.—Modern Coal and Coke Handling Machinery, as used in the Manufacture of Gas: J. E. Lister.

Victoria Institute, at 4.30.—The Influence of German Philosophy in bringing about the Great War: Prof D. S. Margoliouth.

TUESDAY, April 4.

Royal Institution, at 3.—Modern Horticulture—Growing Time and Seed Time (Internal Rhythm): Prof. F. Keeble.

Zoological Society, at 5.30.—Living Cæcilians from South America: Prof. J. P. Hill.—(1) Specimens of the Perciform Fish, *Tilapia nilotica*, with Increased Number of Anal Spines; (2) The Lizards allied to *Lacerta muralis*: G A. Boulenger.—Some Fresh-water Entomostraca from Ceylon: R. Gurney.—Notes on the Sitatunga or Marsh-Antelope of the Sesse Islands: Major R. Meinertzhagen.

Institution of Civil Engineers, at 5.30.—The Rangoon River-Training Works: Sir G. C. Buchanan.—The Present Conditions of Arterial Drainage in some English Rivers: R. F. Grantham.

Röntgen Society, at 8.15.—A Chronograph Constructed to Work with the Electroscope: P. J. Neate.—The Enclosed Tungsten Arc as a Source of Ultra Violet Light: B. H. Morphy and S. R. Mullard.—Experiments with a Coolidge Tube: E. Schall.—A New Modification of the Ionisation Method of Measuring X-Rays: H. E. Donnithorne.

WEDNESDAY, April 5.

Geological Society, at 5.30.

Entomologial Society, at 8.

Royal Society of Arts, at 4.30.—Painting by Dipping, Spraying, and other Mechanical Means: A. S. Jennings.

Society of Public Analysts, at 8.—The Alkalimetric Estimation of Certain Bivalent Metals in the Form of Tertiary Phosphates: Dr. W. R. Schoeller and A. R. Powell.—Note on a Specimen of Russian Oak: P. A. Ellis Richards.—The Estimation of Potassium in Presence of Other Substances: A. H. Bennett.

THURSDAY, April 6.

Royal Society, at 4.30.

Royal Society of Arts, at 4.30.—The Work of the Imperial Institute for India: Prof. W. R. Dunstan.

Linnean Society, at 5.—On Five New Species of Edwardsia, Quatr.: Prof. G. C. Bourne.—A New Species of Enteropneusta from the Abrolhos Islands: Prof. W. J. Dakin.—The Southern Elements of the British Flora: Dr. O. Stapf.

Faraday Society, at 8.—The Making of a Big Gun: Dr. W. Rosenhain.

FRIDAY, April 7.

Geologists' Association, at 7.30.—Notes on the Corallian of the Oxford District: M. Odling.—The Glacial Geology of the Hudson Bay Basin: J. B. Tyrrell.

SATURDAY, April 8.

Royal Institution, at 3.—Radiations from Atoms and Electrons: Sir J. J. Thomson.

CONTENTS.

PAGE
Early Embryology of the Worker Bee. By **E. W. M.** 97
Sociology as a Science. By **A. E. Crawley** 97
Euclid's Book on Divisions of Figures. By **G. B. M.** 98
Our Bookshelf 99
Letters to the Editor:—
  Optical Glass: an Historical Note.—**F. J. Cheshire** 100
  Hamilton and the "Quantification of the Predicate."—**B. D. J.** 101
The Archæological Survey of Nubia. (*Illustrated.*) By **Prof. G. Elliot Smith, F.R.S.** 101
The Shackleton Antarctic Expedition 103
Richard Dedekind. By **G. B. M.** 103
Notes 104
Our Astronomical Column:—
  The Planet Venus 109
  New Lines in the Spectrum of Silicon 109
  Definitive Orbit of Comet 1802 109
  A New Method for the Determination of Latitude 109
  The Plane of the Solar Motion 109
A New Volcano in the Kivu Country. (*Illustrated.*) 110
British Laboratory Glass-ware 111
Scientific and Industrial Research.—Work of the Advisory Council 111
Chemistry and National Prosperity. By **Prof. F. Soddy, F.R.S.** 111
High Explosives and the Central Nervous System. By **Dr. F. W. Mott, F.R.S.** 112
University and Educational Intelligence 114
Societies and Academies 115
Books Received 116
Diary of Societies 116

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